

What is claimed is:



1. A hydrogen generator comprising:
a ceramic carrier defining a fuel processor, the fuel processor including a reaction zone including a reforming catalyst;
an inlet channel for liquid fuel; and
an outlet channel for hydrogen enriched gas.
2. A hydrogen generator as claimed in claim 1 wherein the fuel processor further includes a vaporization zone.
3. A hydrogen generator as claimed in claim 1 further including an integrated heat source.
4. A hydrogen generator as claimed in claim 1 wherein the integrated heat source is a resistive heater that is electrically driven.
5. A hydrogen generator as claimed in claim 3 wherein the integrated heater is a chemical heater including a catalyst and arranged to oxidize fuel to produce heat.

6. A hydrogen generator as claimed in claim 5 wherein the chemical heater further includes an air inlet for providing oxygen for the oxidation of the fuel and the inlet channel includes an opening to provide fuel to the chemical heater.

7. A hydrogen generator as claimed in claim 3 wherein the integrated heater couples heat to the reaction zone using thermally conductive structures.

8. A hydrogen generator as claimed in claim 2 wherein one of the vaporization zone and the reaction zone include a plurality of parallel channels.

9. A hydrogen generator as claimed in claim 2 wherein one of the vaporization zone and the reaction zone include a at least one serpentine channel.

10. A hydrogen generator as claimed in claim 1 wherein the ceramic carrier is an monolithic three-dimensional multilayer ceramic structure.

11. A hydrogen generator comprising:

a three-dimensional multilayer ceramic carrier structure defining a fuel reformer including a vaporization zone and a reaction zone including a reforming catalyst; an inlet channel for liquid fuel; and an outlet channel for hydrogen enriched gas.

12. A hydrogen generator as claimed in claim 11 wherein the ceramic carrier further includes an integrated heater thermally coupled to the reaction zone and the vaporizer zone.

13. A hydrogen generator as claimed in claim 11 wherein the integrated heater is one of a resistive heater that is electrically driven or a chemical heater including a catalyst and arranged to oxidize fuel to produce heat.

14. A hydrogen generator as claimed in claim 13 wherein the chemical heater further includes an air port for providing oxygen for the oxidation of the fuel and the

inlet channel includes an opening to provide fuel to the chemical heater.

15. A hydrogen generator as claimed in claim 11 wherein the integrated heater couples heat to the reaction zone using thermally conductive structures.

16. A hydrogen generator as claimed in claim 11 wherein one of the vaporization zone and the reaction zone include a plurality of parallel structures.

17. A hydrogen generator as claimed in claim 11 wherein one of the vaporization zone and the reaction zone include at least one serpentine channel.

18. A hydrogen generator comprising:

a three-dimensional multilayer ceramic carrier structure defining a fuel processor including a vaporization zone and a reaction zone including a reforming catalyst, at least one of the vaporization zone and the reaction zone including one of a plurality of parallel channels or at least one serpentine channel, the ceramic

carrier further including an integrated heater thermally coupled to the reaction zone and the vaporization zone using thermally conductive structures;

an inlet channel for liquid fuel; and

an outlet channel for hydrogen enriched gas.

19. A hydrogen generator as claimed in claim 18 further including an integrated heater thermally coupled to the reaction zone using thermally conductive channels.

20. A hydrogen generator as claimed in claim 18 wherein the integrated heater is one of a resistive heater that is electrically driven or a chemical heater including a catalyst and arranged to oxidize fuel to produce heat.

21. A hydrogen generator as claimed in claim 20 wherein the chemical heater further includes an air port for providing oxygen for the oxidation of the fuel and the inlet channel includes an opening to provide fuel to the chemical heater.